

### Claims

What is claimed is:

1. A method for operating a fuel injection device, comprising:  
delivering a single fuel shot when rack is less than a first predetermined threshold;  
delivering a first fuel shot and a second fuel shot when rack is above the first predetermined threshold and below a second predetermined threshold;  
delivering a single fuel shot when rack is above a third predetermined threshold.
2. A method for operating a fuel injection device, comprising:  
delivering a single first fuel shot when rack is less than a first predetermined threshold, the first fuel shot being delivered at a crank angle of about 30-5 BTDC;  
increasing the quantity of the fuel in the first fuel shot as rack increases below the first predetermined threshold;  
delivering the single first fuel shot and a single second fuel shot when rack is greater than or equal to the first predetermined threshold, the first fuel shot being delivered at a crank angle of about 30-5 BTDC and the second fuel shot being delivered at a crank angle of about 10 BTDC - 10 ATDC;  
increasing the quantity of the fuel in the first fuel shot and the second fuel shot as rack increases above the first predetermined threshold and below a second predetermined threshold;  
increasing the quantity of the fuel in the first fuel shot and the second fuel shot as rack increases above the first predetermined threshold and below a second predetermined threshold;

capping the first fuel shot at predetermined quantity as the rack increases above the first predetermined threshold; and

delivering only the second fuel shot when rack is greater than or equal to a third predetermined threshold.

3. A method for operating a fuel injection device, comprising:  
delivering a single fuel shot when rack is less than a first predetermined threshold;

delivering a first fuel shot and a second fuel shot when rack is above the first predetermined threshold and the first fuel shot quantity is below the second predetermined threshold;

delivering a first fuel shot equal to the second predetermined threshold and a second fuel shot when rack is above the first predetermined threshold and below a third predetermined threshold;

delivering a single fuel shot when rack is above a third predetermined threshold.

4. A method for operating a fuel injection device, comprising:  
delivering a single first fuel shot when rack is less than a first predetermined threshold, the first fuel shot being delivered at a crank angle of about 30-5 BTDC;

increasing the quantity of the fuel in the first fuel shot as rack increases below the first predetermined threshold;

delivering the single first fuel shot and a single second fuel shot when rack is greater than or equal to the first predetermined threshold, the first fuel shot being delivered at a crank angle of about 30-5 BTDC and the second fuel shot being delivered at a crank angle of about 10 BTDC - 10 ATDC;

increasing the quantity of the fuel in the first fuel shot and the second fuel shot as rack increases above the first predetermined threshold and the first shot quantity of fuel is below a second predetermined threshold;

capping the first fuel shot at the second predetermined quantity as the rack increases above the first predetermined threshold but below the third predetermined threshold; and

delivering only the second fuel shot when rack is greater than or equal to a third predetermined threshold.